

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Invention I in the reply filed on February 15, 2008 is acknowledged.

Claims 10 and 11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on February 15, 2008.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 7,139,460 to Kuroda et al. in view of US 5,850,498 to Shacklette et al.

Regarding claim 1, Kuroda teaches an optical sheet body (Figures 1-4) comprising: a core sheet (4) having a prescribed thickness; a plurality of grooves (25, 26, seen cyclically in Figure 6) formed in the core sheet; a surface side clad layer (5) formed on a surface of the core sheet, and a back-surface side clad layer (3) formed on a back surface of the core sheet; wherein the grooves have a depth that substantially

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corresponds to a thickness of the core sheet (Figures 1 and 2); both ends of the grooves are exposed at end faces of the core sheet (Figures 1 and 2); and sectional parts of the core sheet that are formed between adjacent grooves serve as optical waveguides (10). Kuroda does not explicitly teach that the core sheet is transparent. Shacklette teaches a transparent core sheet (column 1, lines 12-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the transparent core sheet of Shacklette as the core sheet of Kuroda. The motivation would have been to increase the waveguiding capabilities of the core sheet.

Regarding claim 2, Kuroda in view of Shacklette renders obvious the limitations of the base claim 1. Kuroda also teaches at least one light-blocking groove (empty space above element 2 on level of waveguide 4, between grooves 25 and 26, Figure 2, and seen more cyclically in Figure 6) formed in at least one of the sectional parts, wherein the light-blocking grooves have a depth that substantially corresponds to the thickness of the core sheet (Figure 2, except over element 7), the light-blocking grooves span the length between adjacent grooves (seen cyclically in Figure 6), and the sectional parts on which the light-blocking grooves are length serve as non-optical waveguides (20, 30).

Regarding claim 12, Kuroda in view of Shacklette renders obvious the limitations of the base claim 2. Kuroda also teaches an optical card (column 8, lines 33-41) which has a rectangular optical sheet body (Figures 1-4). Kuroda also teaches that both end faces of the optical and the non-optical waveguides are positioned at longitudinal or transverse end faces of the optical sheet body (specifically, Figure 2).

Claims 3-6 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda in view of Shacklette as applied to claim 2 above, and further in view of JP 61121014 to Sawano.

Regarding claim 3, Kuroda in view of Shacklette renders obvious the limitations of the base claim 2. Kuroda does not teach that the grooves and light-blocking grooves are V-grooves. Sawano teaches waveguides (17) formed between grooves (16), wherein the grooves are V-grooves (Figure 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the grooves and the light-blocking grooves of Kuroda with the V-grooves of Sawano. The motivation would have been to increase the speed and efficiency of the groove formation process.

Regarding claim 4, Kuroda in view of Shacklette and further in view of Sawano renders obvious the limitations of the base claim 3. Kuroda also teaches that the grooves are formed in parallel at prescribed intervals (Figures 1, 2, and 4).

Regarding claim 5, Kuroda in view of Shacklette and further in view of Sawano renders obvious the limitations of the base claim 4. Kuroda also teaches that the core sheet has a rectangular shape (Figures 1-4).

Regarding claim 6, Kuroda in view of Shacklette and further in view of Sawano renders obvious the limitations of the base claim 5. Kuroda also teaches a surface protection sheet (9) that covers the surface side clad layer and a back surface protection sheet (2) that covers the back surface side clad layer.

Regarding claims 15-18, Kuroda in view of Shacklette and further in view of Sawano renders obvious the limitations of the base claims 3-6, respectively. Kuroda

also teaches an optical card (column 8, lines 33-41) which has a rectangular optical sheet body (Figures 1-4). Kuroda also teaches that both end faces of the optical and the non-optical waveguides are positioned at longitudinal or transverse end faces of the optical sheet body (specifically, Figure 2).

Claims 7 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda in view of Shacklette and further in view of Sawano as applied to claim 6 above, and further in view of US 5,406,406 to Yamamoto et al.

Regarding claim 7, Kuroda in view of Shacklette and further in view of Sawano renders obvious the limitations of the base claim 6. Kuroda does not teach that the surface side and back-surface side clad layers are adhesive layers whereby the core sheet and the surface protection sheet are bonded together and whereby the core sheet and the back-surface protection sheet are bonded together. Yamamoto teaches adhesive clad layers (column 9, line 45 - column 10, line 17 and column 10, line 45 - column 11, line 5). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the clad layers of Kuroda such that they are adhesive layers, as taught by Yamamoto. The motivation would have been to increase the reliability of the protective layers.

Regarding claim 19, Kuroda in view of Shacklette and further in view of Sawano and further in view of Yamamoto renders obvious the limitations of the base claim 7. Kuroda also teaches an optical card (column 8, lines 33-41) which has a rectangular optical sheet body (Figures 1-4). Kuroda also teaches that both end faces of the optical

and the non-optical waveguides are positioned at longitudinal or transverse end faces of the optical sheet body (specifically, Figure 2).

Claims 8 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda in view of Shacklette and further in view of Sawano and further in view of Yamamoto as applied to claim 7 above, and further in view of US 6,739,744 to Williams et al.

Regarding claim 8, Kuroda in view of Shacklette and further in view of Sawano and further in view of Yamamoto renders obvious the limitations of the base claim 7. Kuroda does not teach that the adhesives are ultraviolet-curing adhesives. Yamamoto teaches ultraviolet-curing adhesives (column 9, line 45 - column 10, line 17 and column 10, line 45 - column 11, line 5). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the adhesive layers of Kuroda with the UV-curing adhesive layers of Yamamoto. The motivation would have been to improve the adhesion qualities of the layers. Kuroda also does not teach that the protection sheets are semitransparent. Williams teaches semitransparent adhesive layers (column 17, line 65 - column 18, line 12). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the protective layers of Kuroda with the semitransparent protective layers of Williams. The motivation would have been to increase the ease of detection of the guided light.

Regarding claim 20, Kuroda in view of Shacklette and further in view of Sawano and further in view of Yamamoto and further in view of Williams renders obvious the

limitations of the base claim 8. Kuroda also teaches an optical card (column 8, lines 33-41) which has a rectangular optical sheet body (Figures 1-4). Kuroda also teaches that both end faces of the optical and the non-optical waveguides are positioned at longitudinal or transverse end faces of the optical sheet body (specifically, Figure 2).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda in view of Shacklette and further in view of Sawano and further in view of Yamamoto and further in view of Williams as applied to claim 8 above, and further in view of US 2004/0028369 to Aylward et al.

Regarding claim 9, Kuroda in view of Shacklette and further in view of Sawano and further in view of Yamamoto and further in view of Williams renders obvious the limitations of the base claim 8. Kuroda does not teach that the core sheet is a PET core sheet. Aylward teaches a PET core sheet (paragraph 91). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the core sheet of Kuroda with the PET core sheet of Aylward. The motivation would have been to improve the waveguiding capabilities of the core sheet by enhancing the refractive index delta between the core sheet and the cladding.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda in view of Shacklette as applied to claim 12 above, and further in view of US 6,864,553 to Epitoux et al.

Regarding claim 13, Kuroda in view of Shacklette renders obvious the limitations of the base claim 12. Kuroda does not teach a composite memory card comprising an optical card and a magnetic storage unit. Epitoux teaches the use of magnetic storage units with optical cards in composite memory chips (column 4, line 63 – column 5, line 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the magnetic storage unit of Tsutsui in conjunction with the optical card of Kuroda as a composite memory card. The motivation would have been to improve the retention of the optical information of the optical card.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda in view of Shacklette as applied to claim 12 above, and further in view of US 5,448,659 to Tsutsui et al.

Regarding claim 14, Kuroda in view of Shacklette renders obvious the limitations of the base claim 12. Kuroda does not teach a composite memory card comprising an optical card and an IC memory chip. Tsutsui teaches the use of IC memory chips with optical cards in composite memory chips (column 4, lines 5-22 and column 8, lines 40-51). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the IC memory chip of Tsutsui in conjunction with the optical card of Kuroda as a composite memory card. The motivation would have been to improve the retention of the optical information of the optical card.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY BLEVINS whose telephone number is (571)272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry M. Blevins/
Examiner, Art Unit 2883

/Frank G Font/
Supervisory Patent Examiner, Art Unit 2883

FGF/JMB
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